Office Memorandum • UNITED STATES GOVERNMENT

TO : The Files

DATE: 7 August 1956

FROM : [redacted] 25X1

SUBJECT: SARAH Beacon Search Equipment Failure

1. The participation of the R&D Laboratory in determining and remedying the cause and failure of SARAH Search Equipment during recent field testing continued on the basis of making several trips to evaluate the damage which is herein noted.

2. The subminiature SARAH Search Equipment consisting of one receiver/transmitter, power unit, and cable accessories was repaired and bench tested at the Laboratory. On 23 July 1956, this equipment was delivered to [redacted] 25X1 [redacted] at Butler Aviation, Hangar 9, National Airport for installation in a USAF type 120 aircraft. 25X1

3. On 24 July 1956, a trip was made to the Marine Air Station, Quantico, Va. to place in operating condition SARAH Search Equipment, ASR1.100, receiver R-4164 and power unit R-4166. One receiver which Marine Corps personnel claimed to have low gain was replaced with a duplicate bench tested unit. The beacons were inoperative due to dead batteries which were replaced. The nose type antenna system (consisting of dipoles and directors) mounted on the helicopter was found to be damaged. The dipole section of the port and starboard antennas were severely bent due to the nose doors swinging open and striking the dipoles. No attempt was made to straighten the dipoles as it appeared they might break off. The effect of the damaged antennas on the lobe patterns was not completely ascertained except that a flight test indicated no apparent distortion.

4. Due to insufficient information to determine the operating condition of the 800 cycle inverter being used, it was replaced with a satisfactorily operating 400 cycle inverter.

5. A complete SARAH Search Equipment receiver and power unit was then bench tested and prepared for installation in the helicopter.

6. On 25 July 1956, the SARAH Search Equipment SR1.100 was installed in the helicopter and pre-flight tested. A 1-1/2 hour flight was then made to evaluate the equipment under simulated field conditions. The beacon was located in an open field.

At an altitude of 500 feet, 2 runs were made with the beacon as target from distances of 15 to 20 miles. The scope observer was readily able to pick up the signal and home on the beacon. The accuracy of the SARAH Search Equipment in pinpointing the beacon target from the 500 foot altitude was well within the specified ± 100 feet.

7. Major Causer, pilot, and Sargeant Sarno, scope observer, expressed satisfaction that the SARAH Search Equipment installed in the helicopter was functioning properly.

8. The receiver unit described as having loss of gain has been bench tested in the Laboratory and found to operate satisfactorily. Replacement components required for repair of the subminiature receiver/transmitter and power unit have been received. This unit has been repaired and bench tested. On 7 August 1956 the unit was delivered to [redacted] 25X1

9. The R&D Laboratory participated in the flight testing of the subminiature SARAH Search Equipment installed in the USAF L20 aircraft by maintaining and operating a SARAH beacon in an open field near the Laboratory.

10. Beginning 2 August 1956, [redacted], PEB was instructed for a two day period in the operation and maintenance of two versions of the SARAH Search Equipment. 25X1

11. This report brings up to date, as of 7 August 1956, the participation of the R&D Laboratory in this portion of the SARAH Search field test activity.

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